INITIAL CAPABILITY EVALUATION SCENARIOS

Version 1.5

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Department of Homeland Security
Transportation Security Administration
Transportation Threat Assessment and Credentialing Office
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PURPOSE:

The Initial Capability Evaluation (ICE) is a collection of scenarios involving Transportation Worker Identity Credential (TWIC) Reader hardware and TSA issued TWIC cards.

The purpose of ICE is to evaluate if a given TWIC Reader has implemented an identified set of functionality specified in the TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 allowing said TWIC Reader to operate in a variety of expected normal situations as well as a few anticipated exception cases.

Purpose	This positive scenario shall demonstrate the Unit Under Evaluation (UUE) can read the signed CHUID using the contactless interface and perform a verification of the CHUID within a specified time period
Reference(s)	TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 Sections 4.2.1.2 , 4.2.1.3 and Appendix A Section A.1
Apparatus	Unless otherwise specified, the scenario environment shall be provided by the candidate TWIC reader vendor inclusive of a PACS implementation (or PC laptop emulation) with connectivity to said TWIC reader. This procedure shall exercise the referenced scenario environment with a particular combination of PACS registered TWIC cards.
Pre-conditions	1. A live TWIC card enrolled in TWIC for Person Alpha. 2. A live TWIC card enrolled in TWIC for Person Beta. 3. A TWIC card enrolled in either TWIC or the Test TWIC system for Person Gamma. 4. Person Alpha and Person Beta registered in the PACS 5. The TWIC Reader / PACS configured for CHUID Only Verification mode.
Procedure	1. Present Person Alpha TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read and verified within 2 seconds by observing the PACS granted access as a result of this card presentation. 2. Present Person Beta TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read and verified within 2 seconds by observing the PACS granted access as a result of this card presentation. 3. Present Person Gamma TWIC card to the contactless interface of the UUE. Check that this card presentation was rejected by the PACS (i.e. unknown user) and no access privileges were granted.
Expected Results	The Person Alpha CHUID and Person Beta CHUID shall be verified within 2 seconds and approved for access. Person Gamma may be verified within 2 seconds but not approved for access. [Gamma not registered with the PACS].

CHUID WITH BIOMETRICS VERIFICATION

Purpose	This positive scenario shall demonstrate the Unit Under Evaluation (UUE) can read the signed CHUID and enciphered biometrics using the contactless interface, obtain and use the TPK, perform a 1:1 biometrics match and validate this information within a specified period of time.
Reference(s)	TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 Sections 4.2.1.2, 4.2.1.3, 4.2.2 and Appendix A Section A.3
Apparatus	Unless otherwise specified, the scenario environment shall be provided by the candidate TWIC reader vendor inclusive of a PACS implementation (or PC laptop emulation) with connectivity to said TWIC reader. This procedure shall exercise the referenced scenario environment with a particular combination of PACS registered TWIC cards.
Pre-conditions	1. A live TWIC card enrolled in TWIC for Person Alpha. 2. A live TWIC card enrolled in TWIC for Person Beta. 3. A TWIC card enrolled in either TWIC or the Test TWIC system for Person Gamma. 4. Person Alpha and Person Beta registered in the PACS which may include capturing the TPK. 5. The TWIC Reader / PACS configured for CHUID with Biometrics Verification mode.
Procedure	1. Present Person Alpha TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified, the TPK obtained and a successful 1:1 biometrics match was achieved all within a maximum of 30 seconds by observing the PACS granted access as a result of this card presentation. 2. Present Person Beta TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified, the TPK obtained and a successful 1:1 biometrics match was achieved all within a maximum of 30 seconds by observing the PACS granted access as a result of this card presentation. 3. Present Person Gamma TWIC card to the contactless interface of the UUE. Check that this card presentation was rejected by the PACS (i.e. unknown user) and no access privileges were granted.
Expected Results	Person Alpha and Person Beta shall be verified within 30 seconds and approved for access. Person Gamma may be verified within 30 seconds but not approved for access. [Gamma not registered with the PACS]

CHUID EXPIRATION

Purpose	This negative scenario shall demonstrate the Unit Under Evaluation (UUE) can read the signed CHUID and determine the credential has expired.
Reference(s)	TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 Sections 6.0 and 7.0
Apparatus	Unless otherwise specified, the scenario environment shall be provided by the candidate TWIC reader vendor inclusive of a PACS implementation (or PC laptop emulation) with connectivity to said TWIC reader. This procedure shall exercise the referenced scenario environment with a particular combination of PACS registered TWIC cards.
Pre-conditions	1. A live TWIC card enrolled in TWIC for Person Alpha. 2. A live TWIC card enrolled in TWIC for Person Beta. 3. A TWIC card enrolled in either TWIC or the Test TWIC system for Person Gamma. 4. Person Alpha and Person Beta registered in the PACS 5. The TWIC Reader / PACS configured for CHUID Only Verification mode. 6. The TWIC Reader / PACS System time set to April 22, 2015.
Procedure	1. Present Person Alpha TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified within 2 seconds but access is not granted due to expiration of the credential. 2. Present Person Beta TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified within 2 seconds but access is not granted due to expiration of the credential. 3. Reset the Reader / PACS System time to the current time prior to starting another scenario.
Expected Results	Person Alpha CHUID and Person Beta CHUID shall not be verified due to an expired credential detected at either the TWIC reader or at the PACS.

CHUID WITH BIOMETRICS VERIFICATION USING WRONG CARDHOLDER

Purpose	This negative scenario shall demonstrate the Unit Under Evaluation (UUE) can read the signed CHUID and enciphered biometrics using the contactless interface, obtain and use the TPK, perform a 1:1 biometrics match that will fail as the cardholder and the card do not match.
Reference(s)	TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 Sections 4.2.1.2, 4.2.1.3, and 4.2.2
Apparatus	Unless otherwise specified, the scenario environment shall be provided by the candidate TWIC reader vendor inclusive of a PACS implementation (or PC laptop emulation) with connectivity to said TWIC reader. This procedure shall exercise the referenced scenario environment with a particular combination of PACS registered TWIC cards.
Pre-conditions	1. A live TWIC card enrolled in TWIC for Person Alpha. 2. A live TWIC card enrolled in TWIC for Person Beta. 3. A TWIC card enrolled in either TWIC or the Test TWIC system for Person Gamma. 4. Person Alpha and Person Beta registered in the PACS 5. The TWIC Reader / PACS configured for CHUID with Biometrics Verification mode.
Procedure	1. Person Alpha presents Person Beta's TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified, TPK obtained, and a 1:1 biometrics match FAILS by observing either a reported TWIC reader error OR the PACS does not grant access as a result of this card presentation. 2. Person Beta presents Person Alpha's TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified, TPK obtained, and a 1:1 biometrics match FAILS by observing either a reported TWIC reader error OR the PACS does not grant access as a result of this card presentation. 3. Present Person Alpha TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified, TPK obtained, and a successful 1:1 biometrics match was achieved by observing the PACS granted access as a result of the card presentation.
Expected Results	Person Alpha and Person Beta shall not be verified within 30 seconds or approved for access when the cards are in the wrong hands. Person Alpha should be verified within 30 seconds and approved for access after Person Alpha uses the Person Alpha TWIC card.

Purpose	This negative scenario shall demonstrate the Unit Under Evaluation (UUE) can detect multiple cards presented and reject all said presented cards.
Reference(s)	TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 Section 7
Apparatus	Unless otherwise specified, the scenario environment shall be provided by the candidate TWIC reader vendor inclusive of a PACS implementation (or PC laptop emulation) with connectivity to said TWIC reader. This procedure shall exercise the referenced scenario environment with a particular combination of PACS registered TWIC cards.
Pre-conditions	1. A live TWIC card enrolled in TWIC for Person Alpha. 2. A live TWIC card enrolled in TWIC for Person Beta. 3. A TWIC card enrolled in either TWIC or the Test TWIC system for Person Gamma. 4. Person Alpha and Person Beta registered in the PACS 5. The TWIC Reader / PACS configured for CHUID Only Verification mode. 6. A small to medium size rubber band (conformant to Federal Standard PPP-T-45 or commercial equivalent)
Procedure	1. Use the rubber band to form a single "card" composed of Person Alpha and Person Beta TWIC cards. 2. Present the packaged cards to the Reader. Check that both cards are rejected.
Expected Results	The TWIC reader shall reject both cards.

TWIC APPEARING ON THE HOTLIST

Purpose	This negative scenario shall demonstrate the Unit Under Evaluation (UUE) and PACS combination can modify access privileges based on changes to a (simulated) TWIC Hotlist.
Reference(s)	TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 Sections 4.2.1.2 and 6.0
Apparatus	Unless otherwise specified, the scenario environment shall be provided by the candidate TWIC reader vendor inclusive of a PACS implementation (or PC laptop emulation) with connectivity to said TWIC reader. This procedure shall exercise the referenced scenario environment with a particular combination of PACS registered TWIC cards.
Pre-conditions	1. A live TWIC card enrolled in TWIC for Person Alpha. 2. A live TWIC card enrolled in TWIC for Person Beta. 3. A TWIC card enrolled in either TWIC or the Test TWIC system for Person Gamma. 4. Person Alpha and Person Beta registered in the PACS 5. The TWIC Reader / PACS configured for CHUID Only Verification mode.
Procedure	1. Present Person Alpha TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read and verified within 2 seconds by observing the PACS granted access as a result of this card presentation. 2. Simulate the TSA TWIC Hotlist download to the PACS and/or reader resulting in the Person Alpha TWIC card being revoked of all access privileges within the reader / PACS combination. 3. Capture the process employed for using the TWIC Hotlist information to update PACS privileges.. 4. Present Person Alpha TWIC card to the contactless interface of the UUE again. Check that the CHUID was successfully read, the CHUID verified but access is not granted due to revocation of privileges resulting from Person Alpha appearing on the TWIC Hotlist. 5. Restore privileges of Person Alpha in the PACS prior to starting another scenario.
Expected Results	Person Alpha is granted access prior to the TSA TWIC Hotlist read and PACS update. Person Alpha is not granted access after the PACS update for TWIC Hotlist information.

Purpose	This negative scenario shall demonstrate the Unit Under Evaluation (UUE) can read the signed CHUID, read the enciphered biometrics over the contactless interface, obtain an (incorrect) TPK and report an error that the biometrics failed to properly decipher.
Reference(s)	TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 Sections 4.2.1.2, 4.2.1.3, and 4.2.2
Apparatus	Unless otherwise specified, the scenario environment shall be provided by the candidate TWIC reader vendor inclusive of a PACS implementation (or PC laptop emulation) with connectivity to said TWIC reader. This procedure shall exercise the referenced scenario environment with a particular combination of PACS registered TWIC cards.
Pre-conditions	1. A live TWIC card enrolled in TWIC for Person Alpha. 2. A live TWIC card enrolled in TWIC for Person Beta. 3. A TWIC card enrolled in either TWIC or the Test TWIC system for Person Gamma. 4. Person Alpha and Person Beta registered in the PACS 5. The TWIC Reader / PACS to be configured for CHUID WITH Biometrics Verification mode. 6. Simulated overwrite of Person Beta TPK with Person Alpha TPK (either using magnetic stripe or a network stored value)
Procedure	1. Present Person Alpha TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified, the Person Alpha TPK obtained and a successful 1:1 biometrics match was achieved by observing the PACS granted access as a result of this card presentation. 2. Substitute Person Beta TPK with Person Alpha TPK. [Can use the Magnetic stripe or the network stored TPK]. 3. Present Person Beta TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified, the INCORRECT TPK obtained and a failed biometrics decipherment was detected and reported. [Deciphering Biometrics of Person Beta using the Person Alpha TPK].
Expected Results	Person Alpha shall be verified within 30 seconds and approved for access. Person Beta shall not be verified due to a reported error when deciphering the Biometric template.

Purpose	This positive scenario shall validate the Unit Under Evaluation (UUE) can read the signed CHUID and enciphered biometrics using the contactless interface, obtain the TPK from a network connection, perform a 1:1 biometrics match and validate this information within a specified period of time.
Reference(s)	TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 Sections 4.2.1.2
Apparatus	Unless otherwise specified, the scenario environment shall be provided by the candidate TWIC reader vendor inclusive of a PACS implementation (or PC laptop emulation) with connectivity to said TWIC reader. This procedure shall exercise the referenced scenario environment with a particular combination of PACS registered TWIC cards.
Pre-conditions	1. A live TWIC card enrolled in TWIC for Person Alpha. 2. A live TWIC card enrolled in TWIC for Person Beta. 3. A TWIC card enrolled in either TWIC or the Test TWIC system for Person Gamma. 4. Person Alpha and Person Beta registered in the PACS 5. The TWIC Reader / PACS configured for CHUID with Biometrics Verification mode. 6. TPK values for all registered cards are held by the PACS / Host and retrieved during a transaction.
Procedure	1. Present Person Alpha TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified, the TPK obtained from the network and a successful 1:1 biometrics match was achieved by observing the PACS granted access as a result of this card presentation. 2. Present Person Alpha TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified, the TPK obtained from the network and a successful 1:1 biometrics match was achieved by observing the PACS granted access as a result of this card presentation. 3. Present Person Gamma TWIC card to the contactless interface of the UUE. Check that this card presentation was rejected by the PACS (i.e. unknown user) and no access privileges were granted.
Expected Results	Person Alpha and Person Beta shall be verified within 30 seconds and approved for access. Person Gamma may be verified within 30 seconds but not approved for access. [Gamma not registered with the PACS]

Purpose	This positive scenario shall demonstrate the Unit Under Evaluation (UUE) can perform a CHUID with active card authentication in a specified period of time.
Reference(s)	TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 Section 4.0 and Appendix A, section A.2
Apparatus	Unless otherwise specified, the scenario environment shall be provided by the candidate TWIC reader vendor inclusive of a PACS implementation (or PC laptop emulation) with connectivity to said TWIC reader. This procedure shall exercise the referenced scenario environment with a particular combination of PACS registered TWIC cards.
Pre-conditions	1. A live TWIC card enrolled in TWIC for Person Alpha. 2. A live TWIC card enrolled in TWIC for Person Beta. 3. A faulted smart card with valid TWIC and PIV applications, TWIC AID, CHUID, PIV AID, and PIV Card Authentication Certificate but invalid PIV card authentication private key. 4. Person Alpha and Person Beta registered in the PACS 5. The TWIC Reader / PACS configured for Card Authentication mode.
Procedure	1. Present Person Alpha TWIC card to the contactless interface of the UUE. Check that the card authentication was performed and the FASC-N was successfully read and verified within 5 seconds by observing the PACS granted access as a result of this card presentation. 2. Present Person Beta TWIC card to the contactless interface of the UUE. Check that the card authentication was performed and the FASC-N was successfully read and verified within 5 seconds by observing the PACS granted access as a result of this card presentation. 3. Present the faulted smart card and observe that card authentication fails.
Expected Results	The Person Alpha FASC-N and Person Beta FASC-N shall be verified within 5 seconds and approved for access. The faulted card shall fail the card authentication challenge.

CHUID WITH BIOMETRICS TIMEOUT

Purpose	This positive scenario shall demonstrate the Unit Under Evaluation (UUE) can read the signed CHUID and enciphered biometrics using the contactless interface, obtain and use the TPK, attempt a 1:1 biometrics match that will time out after a specified period for lack of presentation of a biometric by the cardholder.
Reference(s)	TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 Section 7
Apparatus	Unless otherwise specified, the scenario environment shall be provided by the candidate TWIC reader vendor inclusive of a PACS implementation (or PC laptop emulation) with connectivity to said TWIC reader. This procedure shall exercise the referenced scenario environment with a particular combination of PACS registered TWIC cards.
Pre-conditions	1. A live TWIC card enrolled in TWIC for Person Alpha. 2. Person Alpha registered in the PACS which may include capturing the TPK. 3. The TWIC Reader / PACS configured for CHUID with Biometrics Verification mode.
Procedure	1. Present Person Alpha TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified, the TPK obtained and a 1:1 biometrics match was requested. After a configured timeout period (e.g. 30 seconds) the reader shall time out, provide any event record keeping and return to the ready state awaiting a new card presentation.
Expected Results	The reader should time out, perform an event record keeping and then return to the ready state awaiting a new card presentation.

Purpose	This negative scenario shall demonstrate the Unit Under Evaluation (UUE) can read the signed CHUID and enciphered biometrics using the contactless interface, obtain and use the TPK, perform a series of 1:1 biometrics matches of an incorrect cardholder biometric resulting in the retry limit being reached and subsequently reported via an audible alarm, reader lockout or other means as per Section 7 of the reader specification.
Reference(s)	TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 Section 7
Apparatus	Unless otherwise specified, the scenario environment shall be provided by the candidate TWIC reader vendor inclusive of a PACS implementation (or PC laptop emulation) with connectivity to said TWIC reader. This procedure shall exercise the referenced scenario environment with a particular combination of PACS registered TWIC cards.
Pre-conditions	1. A live TWIC card enrolled in TWIC for Person Alpha. 2. A live TWIC card enrolled in TWIC for Person Beta. 3. Person Alpha and Person Beta registered in the PACS which may include capturing the TPK. 4. The TWIC Reader / PACS configured for CHUID with Biometrics Verification mode.
Procedure	1. Present Person Alpha TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified, the TPK obtained and a series of 1:1 biometrics match attempts were performed using an incorrect biometric from the cardholder (or Person Beta) resulting in an audible alert, reader lockout or other TSA TWIC recognized exception indication. 2. Clear the audible alert, reader lockout or other means returning the reader to the ready state. 3. Present Person Beta TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified, the TPK obtained and a series of 1:1 biometrics match attempts were performed using an incorrect biometric from the cardholder resulting in an audible alert, reader lockout or other means. 4. Clear the audible alert, reader lockout or other means returning the reader to the ready state.
Expected Results	Neither Person Alpha nor Person Beta shall be verified. No access will be granted.

CHANGE TO AUTHENTICATION MODE BASED ON MARSEC LEVEL

Purpose	This positive scenario shall demonstrate the Unit Under Evaluation (UUE) can modify the mode of authentication to support MARSEC level conditions.
Reference(s)	TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 Section 4
Apparatus	Unless otherwise specified, the scenario environment shall be provided by the candidate TWIC reader vendor inclusive of a PACS implementation (or PC laptop emulation) with connectivity to said TWIC reader. This procedure shall exercise the referenced scenario environment with a particular combination of PACS registered TWIC cards.
Pre-conditions	1. A live TWIC card enrolled in TWIC for Person Alpha. 2. A live TWIC card enrolled in TWIC for Person Beta. 3. Person Alpha and Person Beta registered in the PACS which may include capturing the TPK. 4. The TWIC Reader / PACS initially configured for CHUID Verification mode.
Procedure	1. Present Person Alpha TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read and verified within 2 seconds by observing the PACS granted access as a result of this card presentation. 2. Change the configuration of the TWIC Reader / PACS to CHUID + Biometrics Verification mode. 3. Present Person Beta TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read, CHUID verified, the TPK obtained and a successful 1:1 biometrics match was achieved all within a maximum of 30 seconds by observing the PACS granted access as a result of this card presentation.
Expected Results	The Person Alpha CHUID shall be verified within 2 seconds and approved for access. Person Beta shall be verified within 30 seconds and approved for access

Purpose	This positive scenario shall demonstrate the Unit Under Evaluation (UUE) can perform a CHUID with active card authentication and biometric verification in a specified period of time.
Reference(s)	TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 Sections 4.0, Appendix A, section A.4
Apparatus	Unless otherwise specified, the scenario environment shall be provided by the candidate TWIC reader vendor inclusive of a PACS implementation (or PC laptop emulation) with connectivity to said TWIC reader. This procedure shall exercise the referenced scenario environment with a particular combination of PACS registered TWIC cards.
Pre-conditions	1. A live TWIC card enrolled in TWIC for Person Alpha. 2. A live TWIC card enrolled in TWIC for Person Beta. 3. Person Alpha and Person Beta registered in the PACS 4. A faulted smart card with valid TWIC and PIV applications, TWIC AID, CHUID, PIV AID, and PIV Card Authentication Certificate but invalid PIV card authentication private key. 5. The TWIC Reader / PACS configured for CHUID + Card Authentication + Biometric Verification mode. 6. The CHUID with Card Authentication scenario was successfully demonstrated.
Procedure	1. Present Person Alpha TWIC card to the contactless interface of the UUE. Check that the card authentication was performed, the CHUID was successfully read, the TPK obtained and a successful 1:1 biometrics match was achieved all within a maximum of 15 seconds by observing the PACS granted access as a result of this card presentation. 2. Present the faulted smart card and observe the card authentication fails.
Expected Results	The Person Alpha shall be verified within 30 seconds and approved for access. The cloned card shall fail the card authentication challenge.

Purpose	This positive scenario shall demonstrate the Unit Under Evaluation (UUE) shall not accept a card presentation of a TWIC card within one second of a previous TWIC card being removed from the field.
Reference(s)	TWIC Reader Hardware and Card Application Specification Version 1.1, Amendment 1 Section 7
Apparatus	Unless otherwise specified, the scenario environment shall be provided by the candidate TWIC reader vendor inclusive of a PACS implementation (or PC laptop emulation) with connectivity to said TWIC reader. This procedure shall exercise the referenced scenario environment with a particular combination of PACS registered TWIC cards.
Pre-conditions	1. A live TWIC card enrolled in TWIC for Person Alpha. 2. A live TWIC card enrolled in TWIC for Person Beta. 3. A TWIC card enrolled in either TWIC or the Test TWIC system for Person Gamma. 4. Person Alpha and Person Beta registered in the PACS 5. The TWIC Reader / PACS configured for CHUID Only Verification mode.
Procedure	1. Present Person Alpha TWIC card to the contactless interface of the UUE. Check that the CHUID was successfully read and verified within 2 seconds by observing the PACS granted access as a result of this card presentation. 2. Remove Person Alpha TWIC card from the reader and present Person Beta TWIC card to the reader within one second. 3. Observe Person Beta card is not accepted until it is removed from the field, at least one second passes and the Person Beta card is again presented.
Expected Results	The Person Alpha CHUID shall be verified within 2 seconds and approved for access. Person Beta card will not be recognized when presented within one second of Person Alpha card being removed.